

REQUEST FOR INFORMATION (RFI)
ONR RFI Announcement # N00014-18-RFI-0009
Title: Naval Research & Development Enterprise (NRDE) –
Applied Artificial Intelligence (A2I) Summit

I. DISCLAIMER

This announcement constitutes a Request for Information (RFI) for the purpose of obtaining information. It does not constitute a Request for Proposals (RFP), a Request for Quote (RFQ) or an indication that the Government will contract for any of the items and/or services discussed in this notice. Any formal solicitation that may subsequently be issued will be announced separately through Federal Business Opportunities (FedBizOpps). Information on the specific topics of interest is provided in the following sections of this announcement. Neither the Office of Naval Research (ONR) nor any other part of the federal government will be responsible for any cost incurred by responders in furnishing this information.

II. BACKGROUND/ PURPOSE

We define the technology of Artificial Intelligence (AI), at a minimum, algorithms that exhibit some or all of the characteristics of perception, reasoning, learning, and action; one that is capable of operating, and that serves humans involved in military operations and The Naval Research & Development Enterprise (NRDE).

The NRDE has been challenged to assess the potential for the application of AI and related technologies in supporting Navy and Marine Corps (collective known as Naval) operations. ONR is proposing to hold a Summit of technology developers, researchers and thought leaders working on AI, or having applications in which AI technologies are, or could be, transformational.

Information received by ONR over the course of the NRDE - Applied AI (A2I) Summit will be used to determine industry and academia capabilities and thus help validate the Government's requirements for future solicitations. Information from this Summit could be used to establish promising areas of technology development and investment under the ONR Innovative Naval Prototype (INP) and/or Future Naval Capability (FNC) Program. In addition to these programs, the Government may issue one or more Broad Agency Announcements (BAAs) to select technologies for development addressing operational requirements. However, this RFI itself is not soliciting proposals for funded research and development.

III. INFORMATION REQUEST / APPLICATION

The NRDE - A2I Summit is seeking participants from the Government, industry, and academia who can speak to issues related to the application of AI to Naval operations and assist in identifying candidate areas of research.

Attendance of the NRDE A2I Summit shall be by invitation only. To apply to attend, applicants should fill out the attached NRDE A2I Summit Questionnaire. This questionnaire

is designed to identify the potential contribution of prospective attendees to the Summit's Objectives (See Section IV).

The questionnaire will be used to:

1. Identify an A2I community of interest to participate in this summit and future NRDE A2I Summits/ Workshops/ and related events.
2. Identify attendees who could participate on discussion panels during this NRDE A2I Summit.

In addition, respondents who have specific topics or ideas they wish to address are encouraged (**but not required**) to submit (via e-mail) a brief (1-5 Page) white paper in Adobe PDF format to the technical points of contact (See Section VIII). Unclassified white paper responses should be sent assuming Distribution D (DoD and Contractors). Classified GENSER SECRET white papers should be marked appropriately. Please contact the Technical Points of Contact for directions on submission of any sensitive or classified information.

IV. OBJECTIVES OF THE NRDE-A2I SUMMIT

1. Identify a Community of Interest for the research and development of Naval AI applications.
2. Derive Use Cases for potential AI applications with both near (12-18 month) and longer (18-48 month) development periods. The desired AI application use cases would be characterized as meeting Transition Readiness Levels (TRLs 3-9) when they are initially funded. DoD Technical Readiness Levels are defined in Technical Readiness Assessment (TRA) Deskbook, SEP 2003, Sec. III-1 (<http://www.dtic.mil/dtic/tr/fulltext/u2/a418881.pdf>)
3. Identify relevant application domains from industry and academia experience where AI is proving effective outside the Navy DoD domains, and mapping them to potential use cases in the Naval Domain.
4. Identifying hard problems encountered in applying AI technology in industry in addition to the DoD, as well as prospective solutions, approaches, and/or required Science & Technology that would address these hard problems.
5. Identify opportunities for applied AI in Naval Domain, and the Science & Technology requirements to implement them.
6. Deliver a Summary report for NRDE-A2I Summit.
7. Develop an initial Applied AI Technology Roadmap.
8. Set the stage for future focused workshops to address & prioritize AI applications for development within the Naval Domain.

V. APPROACH OF THIS SUMMIT

The NRDE A2I Summit will be a 3-5 day workshop the week of **17 SEPTEMBER 2018** consisting primarily of Government led discussion panels. Panels will address specific AI development topics identified by a Government Advisory Board. Sessions will be held at an Unclassified, For Official Use Only (FOUO) level as well as at the GENSER Secret level.

1. ONR shall establish an NRDE-A2I Summit Government Advisory Board made up of Government scientists and engineers from within the NRDE. The Advisory board will invite participants for the NRDE-A2I Summit on behalf of ONR. The Advisory board will compose discussion panels, identify topics, and select attendees for the summit.
2. Panels will be made up of invited speakers based on questionnaires filled out by attendees who have applied to attend.
3. Panels will be chaired by Government Scientists / Engineers / Topic SMEs.
4. Government Panel chairs will work with panel members to identify specific talking points and discussion topics. Topics will be curated by the Government Advisory Board.
5. Panels will run 60-90 minutes each.
6. Following the Summit, Panel chairs will work with panel members to write a point paper summarizing major talking points & observations. Panel members will be invited to write point papers for inclusion in the report. All papers will be submitted to ONR for inclusion in the summary report of the summit.
7. Due to capacity limitations, the Government reserves the right to limit the number of participants per contractor (or business unit as applicable), federal agency, or university.
8. The intent is to present information at both the unclassified and classified levels (as appropriate) about Naval S&T AI interests, and Capability Gaps for AI in which ONR has specific interests.
9. ONR will not sponsor or assist uncleared respondents in obtaining a security clearance for purposes of attendance at this Summit. Respondents should pay close attention to any correspondence from ONR for information about the date, time, location and security instructions as this information may be updated at any time with no other notification. Attendance at this Summit is not required in order to submit responses to future RFIs, RFPs, BAAs, INPs, or FNCs.

VI. SPECIFIC INFORMATION OF INTEREST

It is anticipated that the information received will reflect the best available technology assessments from those companies, universities and other research entities that are particularly knowledgeable in the fields of AI, and the application of AI to real world problems. There will be an emphasis on Naval Command, Control, Communications, and Computers (C4) and Naval Warfare (Air, Surface, Undersea, Expeditionary, Cyber, and Electronic), however ONR is specifically seeking information about a wide range of AI application to inform the Navy on strategies for going forward in these application domains. Our initial focus is on the application of AI to Operational and Tactical decision making and planning processes. Consolidated technology assessments from groups of performers are not anticipated. The Navy will analyze the information received and reach its own independent conclusions regarding any Applied AI related solicitations that might be included in later solicitations.

The information received regarding industry capabilities should fall within the scope of how AI can be applied. ONR is interested in potential applications to the full range of Naval Operations to include decision support and software applications related, but not limited, to:

1. Analytics (can include marketing and brand recognition):
 - 1.1. Text, Imagery, & Video Analytics (Detection, Identifications, Content summarization, and Sense making, etc.)
 - 1.2. Behavioral Analytics (Deriving activity / changes from Imagery, Video, Text, acoustic data, etc.)
2. Planning/Re-planning & Execution Processes (can include general business processes, long term planning, task or mission objective planning, resource planning, course of action selection, etc.)
 - 2.1. Execution or Business Process Assessment (answers questions such as: how well are processes being executed? What course of action needs to change?)
 - 2.2. Naval Tactical Mission Operations and Assessment (e.g. Automated tools that provide feedback on communications, progress towards accomplishing tasks or goals, etc.):
 - 2.2.1. Antisubmarine warfare
 - 2.2.2. Command, Control, Communications, Computers, and Intelligence, Surveillance & Reconnaissance (C4ISR)
 - 2.2.3. Strike Warfare (neutralize targets at distance)
 - 2.2.4. Electronic Warfare / Spectrum Management (use of electromagnetic spectrum or means of control of the spectrum)
 - 2.2.5. Anti-Air Warfare (any means to nullify or reduce effectiveness of hostile air action)
 - 2.2.6. Amphibious Warfare (the use of naval ships to project air and ground forces onto hostile territory)
 - 2.2.7. Mine Warfare (includes counter mine warfare, use of different types of explosive devices to kill people or destroy equipment. Counter is methods to neutralize or mitigate placed explosive devices)
 - 2.2.8. Naval Gunfire Support (direct or indirect use of naval artillery to support naval operations)
 - 2.2.9. Non-Kinetic Warfare (Information operations, influence campaigns)
 - 2.2.10. Cyber (Attack / Detection / Management)
3. Logistics & Readiness, includes but not limited to:
 - 3.1. People Management (having the right number and qualifications of people for the needed job space)
 - 3.1.1. Tracking / inferring (based on experience) technical & specialty skill sets within individuals as they are developed from practical experience
 - 3.1.2. General Talent recruitment & retention analytics
 - 3.1.3. Planning for long term manning requirements
 - 3.2. People Training (training the appropriate type and number of qualifications, maintaining proficiency, managing career long learning continuum)
 - 3.2.1. Detecting operational proficiency and deficiencies / Dynamically assessing training needs based on performance
 - 3.2.2. Developing Adaptive Training solutions
 - 3.3. Maintenance (all levels of maintenance – organic through depot/factory level maintenance)

- 3.3.1. Scheduled Maintenance & Operational Effectiveness impacts to the availability of an asset, and/or impact to supporting specific missions.
- 3.3.2. Predictive Maintenance for systems, sub-systems, or specific components based upon operational use & experience.
- 3.4. Supply (all levels of maintaining supply chain)
 - 3.4.1. Organizational level support: immediate ability to do maintenance in situ
 - 3.4.2. Depot-level support: Long term, shipyard availability, prognostics and maintenance planning
 - 3.4.3. Identifying functional alternatives to support shortages of delays in supply chains.
 - 3.4.4. Energy management: fuel consumption, electrical power planning, battery power consumption, etc.
- 4. General A2I challenges
 - 4.1. Developing and deploying AI in sparse and/or uncertain data environments
 - 4.2. Training and Operational implications of limited (small) data sets
 - 4.3. Management and synchronization of data in a distributed operational environment
 - 4.4. Decision making in a distributed operational environment
 - 4.5. Denied and degraded environments
 - 4.6. Development of unified (interoperable) AI architectures
 - 4.7. Development of re-usable AI (AI as a service)
 - 4.8. Issues related to the Human-AI Interface, visualizations
 - 4.9. Verification, Validation, and Accreditation (certification)

VII. SUBMISSION INSTRUCTIONS and FORMATTING REQUIREMENTS

Responses are requested to ONR by **13 JULY 2018** for participation in the summit.

All responses shall be submitted electronically via e-mail to the NIPR or SIPR addresses listed below. Respondents shall fill in the attached Questionnaire so as to facilitate the Government Advisory Board in assessing how each respondent can best contribute to the NRDE-A2I Summit.

NOTE: This is anticipated to be the first of a series of NRDE Summits related to AI science and development. Prospective attendees who are not invited to this summit may be invited to participate in future events based on responses to the NRDE A2I Questionnaire.

Communication regarding this notice will not be returned unless submitted electronically via e-mail to a designated POC. Do not provide cost or pricing information. Any received will be deleted and destroyed.

VIII. POINTS OF CONTACT

*****Please include: NRDE-A2I Summit in the Subject line of all electronic communications!!*****

Technical questions regarding this RFI must be sent to the following Point of Contact:

Name: Dr. Jeffrey G. Morrison, Ph.D.
Title: Program Officer
Division Title: Human & Bioengineered Systems
Division Code: 341
Address: 875 N Randolph St., Arlington, VA 22203
Email Address: jeffrey.g.morrison@navy.mil
SIPR Address: jeffrey.g.morrison@navy.smil.mil

Questionnaire and White Paper submissions or other administrative questions regarding this RFI must be sent to the following Point of Contact:

Name: Dr. Noelle Brown, Ph.D.
Title: Engineering Psychologist
Division Title: Information Technology
Division Code: 5582
Address: 4555 Overlook Ave SW, Washington DC, 20375
Email Address: noelle.brown@nrl.navy.mil

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